Book problems – answers (Review for quiz)

(6) (a) $P(H) = \frac{43}{223} = 0.1928$

(b) $P(1) = \frac{113}{223} = 0.5067$

(c) $P(1 \cap H) = \frac{15}{223} = 0.0672$

(d) $P(1 \cup H) = \frac{141}{223} = 0.6323$

(12) (a) $P(Art \cap 2) = \frac{23}{223} = 0.1031$

(b) $P(2 \mid Art) = \frac{23}{57} = 0.4035$

(c) $P(Art \mid 2) = \frac{23}{110} = 0.2091$

(d) $P(Ag \mid 1) = \frac{52}{113} = 0.4602$

(e) $P(1 \mid Ag) = \frac{52}{93} = 0.5591$

(41) make the right decision=
- saying they're drunk when they are
- saying they're not drunk when they aren't

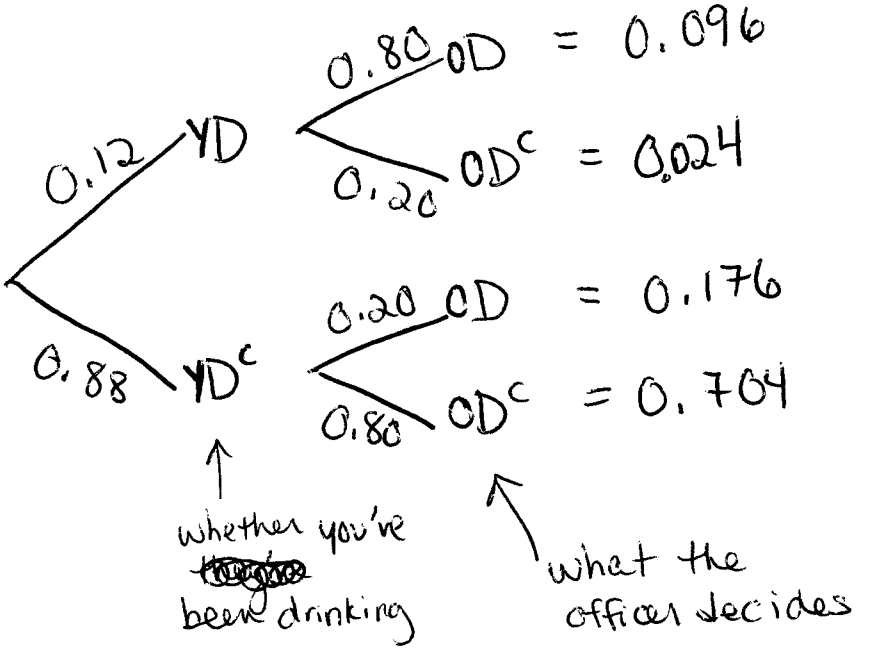
So...

$P(OD|YD) = 0.80$

$P(OD^c|YD^c) = 0.80$

D = drinking
Y = you
O = officer's decision

Also... $P(YD) = 0.12$



(a) $P(OD|YD^c) =$ 0.20

(b) $P(OD) = 0.096 + 0.176 =$ 0.272

(c) $P(YD|OD) = \frac{0.096}{0.272} =$ 0.353

(d) $P(YD|OD^c) = \frac{0.024}{0.728} =$ 0.033

(44) $P(A) = 0.70$

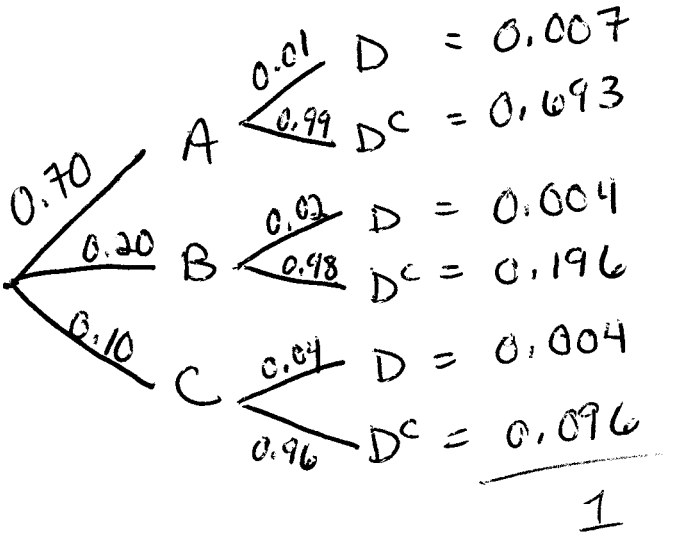
$P(D|A) = 0.01$

$P(B) = 0.20$

$P(C) = 0.10$

$P(D|B) = 0.02$

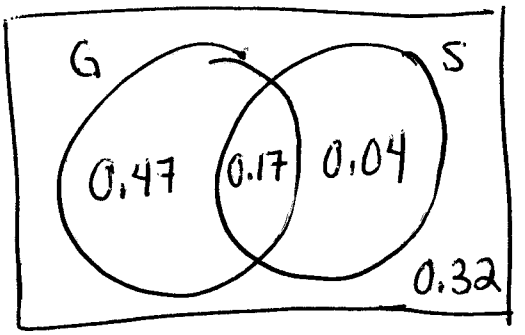
$P(D|C) = 0.04$



$P(A|D) = ?$

$$P(A|D) = \frac{0.007}{(0.007 + 0.004 + 0.004)} = 0.467$$

(1)



(a) $P(G \cup S) = 0.68$

(b) $P(G^c \cap S^c) = 0.32$

(c) $P(S \cap G^c) = 0.04$

(21) (a) $P(S|G) = \frac{0.17}{0.64} = 0.2656$

(b) $P(S|G) \neq P(S)$, so no, they are not independent

(c) $P(S \cap G) \neq 0$, so no, they are not disjoint (or mutually exclusive)